Remarks/Arguments

Applicants thank the Examiner for the Office Action of October 25, 2005 and telephone interview of February 15, 2006. This Amendment is fully responsive thereto. Applicants have amended claims 1-3, 7, 12, 16-17 and 24, cancelled claims 5-6, and presented new claims 26-27.

In the interview, Applicants' representative and the Examiner discussed U.S. Patent No. 3,890,999 (Moskow) and 5,787,925 (Ollivier). Applicants' representative agreed to amend claims 1, 3, and 12 to read over the prior art references. Applicants' representative also proposed new claims 26-27 directed to subject matter distinguished over the prior references. Additionally, Applicants' representative proposed to argue unexpected results with regard to the patentability of claim 24.

Applicants point out that published patent application EP 1 126 202 A submitted in the Information Disclosure Statement filed on May 13, 2005 was inadvertently cited by them as EP126202 A. Applicants kindly ask the Examiner to please note this typographical error.

Rejections With Respect To Moskow

In the Office Action, the Examiner rejected claims 1-8, 11-12, 14-21, and 23-25 under 35 USC 103(a) as obvious over Moskow. Applicants respectfully traverse because Moskow fails to disclose, teach or suggest all of the limitations of claims as amended and the Examiner has pointed to no other prior art teachings curing the deficiencies of Moskow. Applicants further traverse on the basis of unexpected results.

With respect to claims 1-4 and 7-11 and as discussed at the interview, Applicants have amended claims 1 and 3 to require that the pressure regulating section have a plurality of pressure reducing stages to reduce the pressure of the reactive gas from an inlet pressure to an outlet pressure that is lower than the inlet pressure. Claims 5 and 6 have been cancelled. Because Moskow fail to disclose,

teach or suggest all of the limitations of claims 1-4 and 7-11 and the Examiner has pointed to no other prior art teachings curing the deficiencies of Moskow, the rejection as to these claims should be withdrawn.

With particular regard to claims 12, 14-21, and 23, Moskow fails to disclose, teach or suggest a reactive gas, much less a reactive gas having a concentration of no more than 10 ppm at a housing inlet of a regulator. The Examiner fails to point to any other disclosure teaching or suggesting this limitation. Because Moskow fail to disclose, teach or suggest all of the limitations of claims 12, 14-21 and 23 and because the Examiner has pointed to no other prior art teachings curing the deficiencies of Moskow, the rejection as to these claims should be withdrawn.

As to claims 19-22, Moskow fails to disclose, teach or suggest the claimed gas or gases, or the plurality of pressure reducing stages and/or pressure reducing stage structures and/or pressure reducing stage structures as variously required by these claims. Because of this and because the Examiner has pointed to no other prior art teachings curing these deficiencies of Moskow, the rejection as to these claims should be withdrawn.

With particular regard to claims 15-17 and 24-25, Applicants respectfully assert that the invention yields unexpected results thereby rebutting the rejection as to these claims.

Applicants kindly direct the Examiner's attention to the comparison tests between the regulators (types A and C) described at line 15 of page 19 through line 27 of page 20. Regulator A was constructed of stainless steel, having a 316 stainless steel body and a 304 stainless steel diaphragm (1-9 of page 16). One regulator of type A was not passivated (lines 7-8 of page 20) while another of type A was passivated for six months (lines 6-8 of page 20). A regulator of type C was a conventional CONCOA® Model 432 stainless steel two-stage regulator including a filter in both stages and commercially available from Controls Corporation of America located in Virginia Beach, Virginia (lines 9-11 of page 16). Regulator C

included a 316 stainless steel body, a 316 stainless steel diaphragm and 316 stainless steel filters (lines 11-13 of page 16). One of the regulators of type C was well passivated while one was not (lines 20-22 of page 19). After testing of the non-passivated regulator of type C was performed, it was partly passivated and tested again (lines 31-32 of page 19).

The comparison tests of the above described regulators revealed that when a regulator according to the invention was used without passivation, it outperformed an unpassivated conventional regulator by an unexpected degree.

As seen in Figure 6, at a flow rate of 5 mL/min the fully passivated regulator of type C shows a fairly constant response, whereas the signal corresponding to the unpassivated regulator of type C decays fairly quickly to a zero value. Even over the first fifteen to twenty minutes, the signal corresponding to the unpassivated regulator of type C drops at a relatively quick rate. Thus, as shown in Figure 6, one of ordinary skill in the art would have expected that the concentration of a low concentration reactive gas would drop very quickly over the first fifteen to twenty minutes and to zero fairly soon afterward if the regulator was not passivated beforehand.

As seen in Figure 7, at a flow rate of 100 mL/min a difference in the signals exhibited by the fully passivated and partially passivated regulators of type C was realized, but both signals leveled off. Thus, one of ordinary skill in the art would expect that a regulator needed to be passivated to at least some degree before its performance could compare with a very well passivated regulator.

As seen in Figure 8, at a flow rate of 5 mL/min a difference in signal between that of the unpassivated and initially passivated regulators of type A was realized, however, both signals leveled off after about 8-10 minutes.

As seen in Figure 9, at a flow rate 100 mL/min there was no significant difference in the signals between that of the unpassivated and initially passivated regulators of type A.

In comparing the results of the various regulators, some conclusions may be drawn. For purposes of clarity, the degree of passivation for each type of regulator may be grouped into three categories: I) not passivated, II) initially or partially passivated, and III) fully or well passivated. The following discussion describes how the performances of different categories of passivation compare to one another.

First and at the very least, at relatively lower flow rates the difference in performance between unpassivated (category I) and initially passivated (category II) regulators of type A compares favorably with the difference in performance between the partially passivated (category II) and fully passivated (category III) regulators of type C. This is because in both situations, there was a leveling off after which the lower and higher categories of regulators maintained a reasonably constant signal. On the other hand, the performance of the unpassivated regulator of type C at such flow rates is unsatisfactory since the signal drops to zero fairly quickly. Applicants respectfully assert that one of ordinary skill in the art would have expected that the difference in performances between passivation categories I and II for one type of regulator would correspond to the difference between the same two passivation categories I and II for another type of regulator. Thus, an unpassivated regulator according to the invention has been shown to be unexpectedly advantageous in comparison to a conventional regulator.

Second, at relatively higher flow rates there was no significant difference in performance between unpassivated (category I) and initially passivated (category II) regulators of type A. On the other hand, there still exists a substantial difference between the performances of the partially passivated (category II) and fully passivated (category III) regulators of type C. In this case of higher flow rates, one of ordinary skill in the art would have expected that regulators of categories I and II would not have the same difference in performance as the difference in performances between regulators of categories II and II. Moreover and in further comparison, the performance of the unpassivated (category I)

regulator of type C at such flow rates is unsatisfactory since the signal drops to zero fairly quickly.

Thus, one of ordinary skill in the art would have found that the performance of the unpassivated regulator of type A according to the invention was unexpected because of the relatively poorer performance of the unpassivated conventional regulator of type C. Such a one would have further found that the performance of the unpassivated regulator of type A according to the invention was unexpected because it compared favorably with the partially passivated regulator of type C. Thus, the rejection of claims 15-17 and 24-25 should be withdrawn.

Rejections With Respect To Ollivier

In the Office Action, the Examiner rejected claims 1-7, 9-12, 14-20, and 22-25 under 35 USC 103(a) as obvious over Ollivier. Applicants respectfully traverse because Moskow fails to disclose, teach or suggest all of the limitations of claims as amended and the Examiner has pointed to no other prior art teachings curing the deficiencies of Moskow. Applicants further traverse on the basis of unexpected results.

With respect to claims 1-4, 7 and 9-11 and as discussed at the interview, Applicants have amended claims 1 and 3 to require that the pressure regulating section have a plurality of pressure reducing stages to reduce the pressure of the reactive gas from an inlet pressure to an outlet pressure that is lower than the inlet pressure. Claims 5 and 6 have been cancelled. Because Ollivier fail to disclose, teach or suggest all of the limitations of claims 1-4, 7, and 9-11 and the Examiner has pointed to no other prior art teachings curing the deficiencies of Moskow, the rejection as to these claims should be withdrawn.

With particular regard to claims 12, 14-20, and 22-23 and as discussed at the interview, Applicants have amended claim 12 to require that the reactive gas source comprise a gas cylinder containing a reactive gas. As requested by the Examiner, Applicants point out that Ollivier discloses a bulk supply such as a

trailer (col. 3, lns. 3-4 and col. 6, lns. 17-18) and relatively high gas flow rates (col. 2, lns. 18-19; col. 3, ln. 5; col. 3, ln. 59 through col. 6, ln. 5; col. 5, ln. 64; col. 6, lns. 38-50 and 64). One of ordinary skill in the art would readily understand that Ollivier does not disclose, teach or suggest use of a gas cylinder because it has a small volume rendering it incapable of sustaining such high flow rates for a significant amount of time. Because Ollivier fails to disclose, teach or suggest all of the limitations of claims 12, 14-20 and 22-23 and because the Examiner has pointed to no other prior art teachings curing the deficiencies of Ollivier, the rejection as to these claims should be withdrawn.

With particular regard to claim 19-22, Applicants respectfully assert that Ollivier fails to disclose, teach, or suggest the plurality of pressure reducing stages and/or pressure reducing stage structures as variously required by these claims. Because of this and because the Examiner has pointed to no other prior art teachings curing the deficiencies of Ollivier, the rejection as to these claims should be withdrawn.

With particular regard to claims 15-17 and 24-25, Applicants respectfully assert that the invention yields unexpected results as explained above for the rejection of the same claims over Moskow.

Rejections With Respect To Either Ollivier Or Moskow In View Of Jacksier et al.

In the Office Action, the Examiner rejected claim 13 under 35 USC 103(a) as obvious of either Moskow or Ollivier in view of U.S. Patent No. 6,153,167 (Jacksier et al.). Applicants respectfully traverse for the reasons presented above with respect to the rejections of claim with respect to Moskow and Ollivier.

Patentability Of New Claims 26 and 27 Over The Cited Prior Art

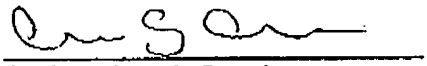
Applicants believe new claims 26 and 27 are also patentable over the art of record. As discussed at the interview, Applicants have presented new claim 26 requiring a plurality of pressure reducing stages to reduce the pressure of the

reactive gas from an inlet pressure to an outlet pressure that is lower than the inlet pressure. Applicants respectfully assert that neither Moskow nor Ollivier discloses, teaches or suggests a plurality of pressure reducing stages. Also, new claim 27 requires a gas cylinder containing the reactive gas and a regulator inlet concentration of no greater than about 10 ppm. Neither Moskow nor Ollivier disclose, teach or suggest both of these limitations.

Accordingly, it is believed that the present application is in condition for allowance. Early notice to this effect is earnestly solicited.

Should the examiner believe an additional telephone call would expedite the prosecution of the application, he is invited to call the undersigned attorney at the number listed below. A fee for the two additionally presented independent claims as well as a petition for a one month extension of time have been contemporaneously submitted with this Amendment along with the associated fee. Otherwise, it is not believed that any fee is due at this time. If that belief is incorrect, please debit deposit account number 01-1375. Also, the Commissioner is authorized to credit any overpayment to deposit account number 01-1375.

Respectfully submitted,



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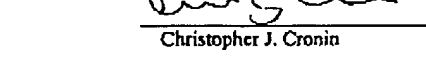

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